goodness of fit statistics was not significant, indicating excellent model discrimination. The model generated (M) was compared with the Northern New England (NNE), and the Cleveland Clinic (CC) models.

	Area of X	Area of Y	p value
Model NNE vs Model CC	0.89	0.80	0.022
Model NNE vs Model M	0.89	0.91	0.08
Model CC vs Model M	0.80	0.91	0.003

Model NNE had a significantly greater ability to predict mortality in this patient population when compared with model CC ($p < 0.03$). *Conclusions:* 1) Predictive models for PTCA mortality yield variable results when applied to patient populations other than the one on which the original model was developed. 2) Although proper risk adjustment may allow comparisons of different operators and institutions, case mix may confuse interpretation of observed vs expected outcomes.

1032-40 Clinical Variables Predict Costs and Resource Utilization in Unstable Angina

J.E. Calvin, L.W. Klein, B.J. VandenBerg, P. Meyer, J.E. Parrillo. *Rush Medical College, Chicago, IL, USA*

In a previous study we developed and validated a model based on early identified clinical factors that predicts risk of major cardiac complications in unstable angina (UA). To determine whether this model could also predict resource utilization in UA, 470 patients were prospectively evaluated. The population was ordered on the basis of estimated risk of major complication (MI, death or heart failure) and then divided into 3 groups: Low risk: n = 72, < 2%; Medium risk: n = 286, 2.5–15%; and High risk: n = 112, > 15%. Admission to CCU, use of surgery, length of stay (LOS) and direct hospital costs estimated on basis of payor and DRG code were compared. *Results:* High risk patients were more frequently admitted to CCU compared to medium and low risk patients (80% vs 65%, $P < 0.05$ and vs 51%, $P < 0.05$; respectively), received coronary surgery more often (27% vs 15% and 8%, $P < 0.05$, respectively), had a higher LOS (10 ± 7 days vs 8 ± 6 days, $P < 0.05$ and 5 ± 3 days, $P < 0.005$) and total hospital cost (\$22,120 ± 22,271 vs \$14,542 ± 11,003, $P < 0.05$ and \$9102 ± 7136, $P < 0.05$) then medium and low risk patients, respectively. Low risk patients had lower LOS and hospital costs than medium risk patients ($P < 0.05$). *Conclusions:* Clinical variables available within the first few hours of admission predict subsequent resource utilization and hospital cost. This model can support clinical practice guidelines by stratifying patients into low, medium and high risk categories which differentiate both outcome and intensity of treatment.

1032-41 Predictors of Not Administering Thrombolytic Therapy to Eligible Patients with AMI

J.E. Murillo, J. Chen, Y. Wang, H.M. Krumholz. *Yale University School of Medicine, New Haven, CT, USA*

Although thrombolytic therapy is a cost-effective treatment of AMI, the utilization rates are markedly low among eligible elderly patients. To evaluate the factors associated with the decision not to administer thrombolytic therapy (TT) in the elderly we used the CT cohort of the Cooperative Cardiovascular Project database which contains medical record information for more than 3,000 Medicare patients with AMI.

Among the 756 patients > 65 years with either ST-segment elevation in at least two contiguous leads or LBBB not known to be old, no absolute contraindications to TT and who were not referred for direct PTCA or CABG, 422 (56%) did not receive thrombolytic therapy. To predict the decision not to administer TT we developed a logistic regression model using demographic and clinical factors, preadmission medications, and ECG characteristics as the candidate variables, as shown below. The area under the ROC curve was 0.85 suggesting high predictive power.

Variable	OR	95% CI	P
Age, each year	0.92	0.90–0.95	0.00
Chest Pain > 6 hrs	0.26	0.18–0.38	0.00
Chest Pain Absent	0.28	0.18–0.42	0.00
LBBB Not Known To Be Old	0.03	0.01–0.14	0.00
Total ST Elevation Amplitude ≤ 6 mm	0.37	0.23–0.58	0.00
ST Elevation in at least 2 Leads	0.60	0.39–0.93	0.02
Old Q Waves	0.56	0.38–0.82	0.00
Confusion	0.35	0.15–0.84	0.02
Coma	0.07	0.01–0.59	0.02

Conclusion: Variables that suggest a larger infarction, prior ischemic injury, greater risk from the therapy and inability to consent to therapy explain a substantial proportion of the decision not to treat with thrombolytic therapy.

1032-42 A Simple Clinical Classification Can Identify Patients at Risk for Adverse Patient Outcomes (APO) from Diagnostic and Interventional Procedures: A Prospective Evaluation

B.F. Uretsky, F. Wang, S. Black, D. Cutler, M.J. Davis, C. deFilippi, R. Farrell, E.J. MacInerney, Jr., G. Stouffer. *The University of Texas Medical Branch, Galveston, TX, USA*

Stratifying procedural risk is important in developing pt care algorithms and critiquing physician and laboratory outcomes. We prospectively categorized as high- or low-risk (HR, LR) 5291 consecutive diagnostic (diag) and 729 interventional (interv) cases. HR pts had ≥ 1: diabetes, age > 70 yrs, MI < 8 d, NYHA functional III, IV, systolic < 90 or > 200 mmHg, peripheral vascular disease, ejection fraction < 25%, creatinine > 1.8 mg%, CPR < 7 d, inotropic or mechanical support, unstable angina, aortic stenosis, CVA < 4 wks, or bleeding diathesis LR = no HR features.

	% Diag APO		% Interv APO	
	LR (n = 2834)	HR (n = 2457)	LR (n = 262)	HR (n = 467)
Death	0	0.12	0	0.86
MI (Q, non-Q)	0.07	0.12	1.9	3.4
CABG	0	0.08	0	1.7*
CVA	0.14	0.44*	0	0
Arrhythmia	0.3	0.69*	1.5	1.9
HI	0.03	0.49**	0	0.21
Vascular	0.85	2.5**	2.3	3.0
All APOs	1.4	4.8**	5.7	11.6**

*p<0.05, **p < 0.001 HR vs LR; HI = hemodynamic instability requiring treatment.

Conclusion: A simple pre-procedural clinical classification can to a great extent differentiate LR from HR pts for cash-related APO.

These data may be used in defining LR pts for outpatient caths and evaluating physician and laboratory performance.

1032-43 Use of Artificial Neural Networks to Predict Mortality After PTCA

R.V. Freeman, D.W.M. Muller, E.R. Bates, S.W. Werns, E. Kline-Rogers, D.J. Karavite, K.A. Eagle, M. Moscucci. *University of Michigan Heart Care Program, Ann Arbor, MI, USA*

Logistic regression models of percutaneous transluminal coronary angioplasty (PTCA) mortality are limited by their relative inability to predict outcomes for individual patients and by low sensitivity. Artificial neural networks (NN) are computer constructs that can detect complex patterns within a data set and have been useful in pattern recognition for outcome prediction models. This study examined the application of a NN in predicting mortality in patients undergoing PTCA. A NN was trained on 62 clinical input variables collected from 1250 consecutive PTCA procedures. Cross validation was done by dividing the database into three training and test sets. Final validation was done by running the NN on an additional 224 patients not used in the training or test phase of NN construction. Positive multivariate predictors of in-hospital mortality included age, heart failure, renal failure, hemodialysis, unstable angina, number of diseased vessels, cardiogenic shock, ventricular tachycardia or fibrillation, LAD lesion, pre-procedure heparin, IABP support requirement, vasopressor support requirement, and urokinase during the procedure. Multivariate predictors of in-hospital survival included pre-procedure aspirin, pre-procedure t-PA and post-procedure beta-blocker administration. On the training database, the NN for mortality performed with sensitivity (s) = 84.1%, a positive predictive value (PPV) = 78.7%, and specificity (sp) = 99.2%. A logistic regression model constructed on the same training database had s = 31.8%, PPV = 56%, and sp = 99.1%. The NN preserved its accuracy in the independent validation set with s = 42.9%, PPV = 75.0%, and sp = 99.5%. The lower sensitivity seen on the independent validation set was largely attributable to the low number of events (deaths = 7) observed in the validation set. *Conclusion:* Artificial neural networks may provide a valid and possibly more accurate alternative to conventional logistic regression models for PTCA mortality assessment, and for predicting outcomes for individual patients.

1032-44 The Financial Impact of Stenting is Dependent on Clinical Efficacy and Payer Mix

P.T. Vaitkus, W.T. Witmer, R.G. Brandenburg. *The University of Vermont, Burlington, VT, USA*

Previous studies have focused exclusively on costs of stents, ignoring costs of prevented complications and ignoring associated revenues. We assess the cost effectiveness of bailout stenting from the perspective of the provider organization: how clinically effective does stenting need to be to achieve

TUESDAY POSTER